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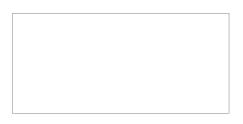




PHOTOGRAPHIC INTERPRETATION REPORT

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

LAUNCH ASSIST DEVICE COMPONENTS FOR THE SOVIET SS-X-17 AND SS-X-18 MISSILE SYSTEMS



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LAUNCH ASSIST DEVICE COMPONENTS FOR THE SOVIET SS-X-17 AND SS-X-18 MISSILE SYSTEMS

ABSTRACT

1. Three types of cylinders from expended launch assist devices have been identified at the Tyuratam Missile Test Center, USSR. These cylinders have been seen discarded at research and development launch sites following SS-X-17 and SS-X-18 missile launches.

This report describes the three types of cylinders and includes a location map, line	drawings,
annotated photographs, and two tables.	25X1
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INTRODUCTION

- 3. The SS-X-17 and SS-X-18 missiles are liquid propellant ICBMs currently being flight tested from the Tyuratam Missile Test: Center (TTMTC Tyuratam SSM Complex). Each of these missiles is believed to use a launch assist device in expelling the missile from the silo. Figure 1 illustrates sites at TTMTC where a launch assist device (LAD) or component has been seen.
- 4. A LAD consists of two basic parts: a sabot, which is attached to the missile, and a gas generator, which is beneath the sabot. A pressure chamber is between the sabot and the gas generator. In operation, gases produced by the gas generator, probably a solid propellant charge, fill the chamber and propel the sabot and missile out of the silo. The sabot separates from the missile prior to first-stage ignition.
- 5. The identification of three types of cylinders as components of a LAD is based on the timing and frequency of their appearance at launch sites. Tables 1 and 2 show this chronology. Additionally, several cylinders have been returned to complex H, previously associated with LAD research and development, after test firings from the R group silos. Other cylindrical objects, possibly associated with the SS-X-18 LAD, have been accumulating at complex C/H support area (Support Facility 3) since June 1973.

BASIC DESCRIPTION

- 6. Three differently configured cylindrical objects (Figure 2) have been identified at some of the research and development facilities for the SS-X-17 and SS-X-18 missile systems at TTMTC. Two of these objects, arbitrarily designated components A and B, are associated with the SS-X-17. The third object, designated component C, is associated with the SS-X-18.
- 7. Both missile systems were launch-phase tested at complex H between November 1971 and August 1972, before testing began from the silos in the R and S groups. Neither component A nor component B could be identified at complex H; however, component C has been seen discarded in the complex H debris pile.

SS-X-17 Launch Assist Device Components A and B

- 8. Since mid-September 1972 the SS-X-17 has been flight tested from two modified type IIID launch silos, those at sites S6 and S7. As a result of this testing, cylinders from expended LADs have frequently been seen discarded at these launch sites.
- 9. Either a component A or a component B was seen discarded at a launch site following ten of the 14 reported SS-X-17 launches (Table 1). Of the ten components seen since September 1972, six were type A and four were type B. Most of these components, initially discarded at a launch site after a missile launch, were subsequently removed from the site. Where these components were taken could not be discovered.
- 10. Several components had flattened and compressed cylinder walls. Although the cause of this damage has not been determined, the components may be damaged by a system designed to capture them in the silo. However, the component could also be damaged after it separates from the missile and falls back to the ground in the vicinity of the site.

		5X1
omponent A		
11. Component A is a cylinder rigures 2 and 3). A light-toned dome top of the dome about even with the top edge of the upper inside wall of the cylinder by a concave floor. One dome removed, leaving an open, thin-skinned cylindrical	Component A has also been seen with	25X 25X
12. Component A may be the sabot portion of the SS side the cylinder may be the top half of the pressure ch		
omponent B		
13. Component B cylinder (Figure 2).	consists of a cylinder within	25X 25X
	top edge of the outer cylinder.	25X 25X 25X
14. Component B may be the gas generator section of		25.
ed to remove this component. The deep wheel impression the crane after depositing the component indicates that the	et northeast of the silo left on the ground by the mobile crane s compared with the shallow ones left e component is very heavy. The removal	25X 25X 25X
this component from the launch site suggests that it was bsequent missile launches. This component may have been we contained the propellant used to operate the LAD.	considered hazardous to personnel and	
16. The relationship of components A and B to an St is possible that the two components are combined to male combined and attached to the end of the SS-ould then be 80 feet. Both components A and B are comparations SS-X-17 canister.	xe one LAD If they X-17 canister, the length of the canister	25) 25) 25) 25)
S-X-18 Launch Assist Device Component C		
17. Since mid-October 1972 the SS-X-18 has been flithe R group at TTMTC. As a result of this testing, cylinen discarded at three of the eight type IIIF launch sites: tes, pre- and postlaunch activity has been seen at sites R pe IIIF launch sites, R7 (north and south silos), R12, T1, and probably have not been used.	nders from expended LADs have been R4, R9, and R11. Of the other five 8 and R10. The silos at the remaining	
18. A component C (Figures 2 and 5) has been seen of the 17 reported SS-X-18 launches since mid-October 19 ten at site R4 on 20 October 1972, the day after the first sile as subsequently removed from the site. There are present three launch sites: R4, R9, and R11.	72 (Table 2). The first component was o launch of an SS-X-18. This component	
19. Component C is an open, thin-skinned cylinder appet in diameter. The light construction of this component omponent A.	opproximately 8 feet long and about 10 resembles the SS-X-17 cylinder from	
20. The relationship of component C to an SS-X-18 nat the length of this component could contain the ebjects may be associated with the SS-X-18 LAD and have nunch sites. These objects are: a ring, a cap, and a light	ntire LAD for the SS-X-18. Three other e been seen at some of the type IIIF	25X
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Table 1. Chronology of SS-X-17 Launch Assist Device Components at Launch

				Launch	Site S6				Launch	Site S7	
1	SS-X-17	Comp	Comp	Comp	Comp	Comp	Comp	Comp	Comp	Comp	Comp
Į.	Launch Dates	Α	Α	Α	В	A	В	В	Α	A	В
		Negate									
	15 Sep 72*										
		F R									
		l n	Negate								
	3 Nov 72		ivegate								
	0110172		F								
			P								
			Р								
			Р								
		i	Р	Negate							
	26 Dec 72										
	10.1470		Р	F				Negate			
	12 Mar 73		Р								
			IDO	R				IDO			
	6 Apr 73		IDO					F			
	0 Apr 73		Р					IDO			
			P					P			
			P					P			
			Р								
			Р					Р			
			R		Negate			P			
					IDO						
	5 Jun 73				-			_			
	21 Jun 73				F	Negate		Р	Negate		
1	9 Jul 73										
	0 00.70				P	F		R**	F		
					P	P		••	P		
					Р	Р			Р	Negate	
	25 Jul 73									•	
					Р	Р			Р	F	
					P	P			Р	Р	
					P	P			P	P	
					P P	P P			P	P	
					P P	P P			P P	P	
					P	P			P P	P P	
					P	P	Negate		P	P	
	2 Oct 73				•	•	. augute		'	•	
					Р	Р	F		Р	Р	
	18 Oct 73										
					Р	Р	Р				
	14 Nov 73										
					Р	Р	Р		R	R	Negate
	20 Dec 73										
	27 Dec 73				Р	Р	Р				F

Legend
* = First silo launch of an SS-X-17
F = First observation of component

P = Component removed from launch site
P = Component present
IDO = Identifiable only
** = This component removed from launch site by mobile crane to an area about 1,700 feet away.

Table 2. Chronology of SS-X-18 Launch Assist Device Components at Launch Sites R4, R9, and R11 at TTMTC (See legend below)

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	Tites n4, r		1 at TTM1	C (See leg	jena berot		Site R9		Launah	Site R11
20 1/ 40		Launch	Site R4	0	Comp	Launch	Comp	Comp	Comp	Comp
SS-X-18	Comp	Comp	Comp	Comp		Comp				
Launch Dates	С	С	С	С	С	С	С	С	С	<u>C</u>
	Negate									
19 Oct 72*	I -									
	F									
	l P									
	P									
	P									
	P									
Į.	P									
	R									
	IDO				IDO					
29 Dec 72										
ļ		Negate			Negate					
21 Feb 73	1									
		F			F					
					IDO					
6 Apr 73					ŀ					
		Р			P					
		P			l P					
i		P			P				l	
29 Apr 73		'			l '					
29 Apr /3	1	Р			Р					
		P			P				1	
•	1	Р								
1					P					
					Р	Negate				
24 May 73										
					P	F			Negate	
16 Jun 73	1									
4 Jul 73	1									
		Р			P	Р			F	
		Р			Р	Р			P	
		P			P	Р			P	
30 Jul 73									,	
30 301 73		Р			P	Р			Р	
		P			P	P			P	
		P			P	P			P	
45.0							No+			
15 Aug 73		Р			P	P	Negate F		P	
		Р	Negate		P	Р	1-		P	
3 Sep 73					l		_		_	
		P	F		P	Р	Р		P	Negate
12 Sep 73									1	
		Р	Р		P	Р	Р		P	F
12 Oct 73										
1		Р	Р		P	Р	Р		P	Р
		•			P	P	P		Р	Р
5 Nov 73					'	•			1	
5 NOV / 3		Р	Р	Negate	P	P	Р	Negate	P	Р
00 N - 70		г	F	ivegate	'	,		ivogate	'	,
20 Nov 73										
16 Dec 73					1					
26 Dec 73						_	_	_	_	_
H.	1	Р	Р	F	P	Р	P	F	P	Р

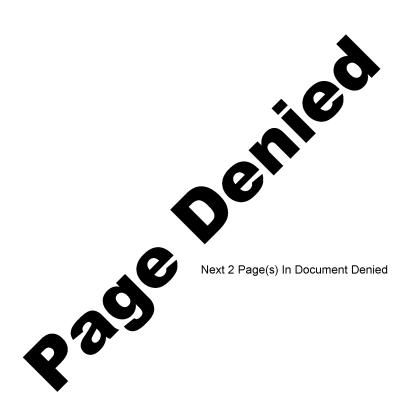
Legend

^{* =} First silo launch of an SS-X-18

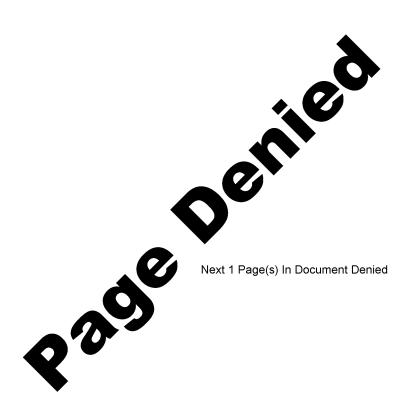
^{-- =} Photo coverage, no components F = First observation of component

P = Component present

R = Component removed from launch site IDO = Identifiable only



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This ring has been seen at one site, site R11, and a maximum of three r	25X
22. The cap (Figure 6) has an A slight dome appears on the bottom surface inside the cap. A cap has been R8 and R9.	unknown height. 25X
23. The light-toned disc (Figure 6) consists of two different-diameter, ci	rcular plates stacked 25X
concentrically, one on top of the other.	
Two discs have been seen at site R8, three at site R9, and one at site R11 24. As a result of the launch-phase testing for the SS-X-18 at launch of	25X
Two discs have been seen at site R8, three at site R9, and one at site R13 24. As a result of the launch-phase testing for the SS-X-18 at launch of SS-X-18 canister sections, LAD components, and other debris have accumul components for the SS-X-17 were identified. Since the cessation of testing at a 1972, several additional cylinders from LAD components have been seen (Figure	omplex H, expended ated there. No such complex H in August 7). Apparently these
Two discs have been seen at site R8, three at site R9, and one at site R13 24. As a result of the launch-phase testing for the SS-X-18 at launch of SS-X-18 canister sections, LAD components, and other debris have accumul components for the SS-X-17 were identified. Since the cessation of testing at a 1972, several additional cylinders from LAD components have been seen (Figure cylinders were brought to complex H from the silos in the R group after results.)	omplex H, expended ated there. No such complex H in August 7). Apparently these
Two discs have been seen at site R8, three at site R9, and one at site R13 24. As a result of the launch-phase testing for the SS-X-18 at launch of SS-X-18 canister sections, LAD components, and other debris have accumul components for the SS-X-17 were identified. Since the cessation of testing at a 1972, several additional cylinders from LAD components have been seen (Figure	25X complex H, expended ated there. No such complex H in August 7). Apparently these nissile firings. 25X co the wall thickness 25X
Two discs have been seen at site R8, three at site R9, and one at site R13 24. As a result of the launch-phase testing for the SS-X-18 at launch of SS-X-18 canister sections, LAD components, and other debris have accumul components for the SS-X-17 were identified. Since the cessation of testing at a 1972, several additional cylinders from LAD components have been seen (Figure cylinders were brought to complex H from the silos in the R group after respectively. The apparent wall thickness of this cylinder is similar ascen on the outer cylinder of component B (SS-X-17); however, the size and	25X complex H, expended ated there. No such complex H in August 7). Apparently these nissile firings. 25X co the wall thickness 25X



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